BOX FOR MILITARY CAMP EQUIPMENT

BACKGROUND OF THE INVENTION

Field of the Invention

In its most general aspect, this invention concerns a box particularly for military camp equipment. In particular, this box can be transported and stocked in various environments such as warehouses, ship holds, marine containers, and stocking areas in general, even outdoor, and is composed of a structure that is made up of a bottom grid, a top grid, opposite sides and opposite side panels.

Description of the Related Art

It is a well-known fact that military camp equipment needs to be transported and stocked in a simple and economical manner.

Standard sized wooden boxes are currently used to satisfy this need. These boxes possess good mechanical resistance, are easy to assemble, but are expensive to manufacture.

Cardboard boxes have been employed, light, easy to produce, and much cheaper to manufacture. However they have a limited work life, are not so resistant to wear and tear, and are not environment-friendly; in short, because of these problems, cardboard boxes can generally only be used once because the basic material of which they are made deteriorates rapidly. Moreover they are marked by a poor water resistance, high maintenance costs, need to use straps, belts and the like to ensure staunchness, high disposal costs, high risk of theft of the contents, fast deterioration of the box.

BRIEF SUMMARY OF THE INVENTION

The problem at the basis of the present invention is that of creating a box particularly for military camp equipment that can solve the drawbacks of the prior art described above.

These problems are overcome, according to the present invention, by a box particularly for military camp equipment of the specified type, which is characterized in that said structure is metallic.

Further characteristics and advantages of the box according to the invention will be better shown from the detailed description of an example of realization, made hereinafter with reference to the enclosed drawings, with illustrative and non limiting purpose.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows schematically a perspective view of a box particularly for military camp equipment according to the present invention;

Figure 2 shows schematically a perspective view and in separated parts of the box in Figure 1;

Figures 3a and 3b show schematically a perspective enlarged view of the fixing system for the box sides, respectively in cross section and in perspective;

Figure 4 shows schematically a perspective view of the separated parts and a detail of the box;

Figure 5 shows schematically a perspective view of the box stacking with another identical box;

Figure 5a shows a perspective view of a detail of the stacking system shown in Figure 5;

Figure 5b shows schematically a detail of the stacking system shown in Figure 5;

Figures 6a and 6b and 6c show schematically the characteristics of the stacking system of two boxes according to the invention;

Figures 7a, 7b and 7c show a perspective view of an enlarged detail of the box shown in Figure 1;

Figures 8a, 8b, and 8c show a view of the successive steps of assembly of the box shown in Figure 1.

DETAILED DESCRIPTION OF THE INVENTION

With reference to Figure 1, with 1 a box particularly for military camp equipment according to the present invention and comprising a metal structure 2 is generally indicated.

Said metal structure 2, generally in parallelepiped form, is composed in turn (Figure 2) of a top grid 3, a bottom grid 4, opposite sides 5, and opposite side panels 6.

Said top grid 3, and bottom grid 4, are rectangular metal frames, as similarly are rectangular metal frames said opposite sides 5, and said opposite side panels 6.

Said metal frames are generally built from closed sections commercially available; advantageously said sections are square.

In particular, the opposite sides 5, and the opposite side panels 6, are comprise at least two uprights 8 each and a plurality of crossbars 9 fixed to the uprights 8 by weldings or other known methods.

The top grid 3 and bottom grid 4 are made of opposite long sides 10, opposite short sides 11 and a plurality of crossbars 9, made of the above mentioned sections, said crossbars being fixed to said long sides 10 by welding or other known methods.

According to a preferred but non-limiting embodiment, said crossbars 9, are arranged in perpendicular fashion to said uprights 8, in the case of the opposite sides 5, and the opposite side panels 6, and are arranged in

perpendicular manner to said long sides 10, in the case of the top grid 3 and bottom grid 4.

To said frames are associated buffer panels 7, glued to said frames so to be placed in the interior part of structure 2 of box 1; said buffer panels 7, are composed of sheets made of a material with adequate mechanical resistance to contain and protect the camp equipment packed in box 1, manufactured, for example, from different kinds of elastomer materials. Said panels 7 can be easily replaced individually in the case of breakage, without having to intervene on the structure 2, or the remaining panels 7.

With reference to Figures 2, 3a and 3b, said opposite sides 5 are connected to said top grid 3 and said bottom grid 4 using male-female engagement means 12 and fixing means 14.

Said engagement means 12 are composed of male connecting and centering elements 12a, and female elements 12b. Said male elements are composed of cylindrical pins 13a arranged on the sides 5, in particular on the most external crossbars 9, at the uprights 8, and on the opposite side of these uprights 8 and are inserted into said female engagement means 12b, which are composed of housings 13b of the bottom grid 4, and the top grid 3, made out in correspondence of said pins 12b on sides 5.

Said housings 13b are provided with circular holes with predetermined size adapted to allow the passage of the cylindrical pins 12b; the depth of said housings 13b is preferably the same as the length of the pins 12b.

The fixing means 14 described above include a screw 14a, a hole 14b in the base of the housings 13b, with a diameter smaller than the diameter of the pins 12b, co-axial with said pin and located on the opposite side compared to the insertion hole for the pin 12b, a threaded cavity 14c drilled inside each pin 12b and coaxial with said pin 12b, sized so that each pin 12b can be fixed in its corresponding housing 13b using a screw 14a passing through said hole 14b and screwing into said threaded cavity inside each pin 12b.

According a preferred embodiment, as illustrated in Figure 4, the two opposite side panels 6, are provided with side fins 15, said fins 15 being integral part of the uprights 8 of said side panels 6. In particular, said fins are generally rectangular in shape, elongated, and completely surround the upright 8 of which they are part.

Moreover, said fins, are located on the part of side panels 6 towards the exterior of box 1, protruding in the direction of the corresponding uprights 8 of sides 5, and resting on said corresponding uprights 8 of sides 5.

Advantageously the top grids 3 and bottom grids 4 are provided with container rims 16 and 17 respectively, located on and forming part of the sections that constitute the respective short sides. Said container rims 16 and 17, are positioned on the parts of grids 3 and 4 that face the exterior of the box 1, on the part of the respective side panels 6. In particular, the container rims 16 of the top grid 3 protrude in the direction of the bottom grid 4, and vice-versa, the container rims 17 of the bottom grid 4 protrude in the direction of the upper grid 3.

Said container rims 16 and 17 permit simple and rapid insertion of the opposite sides against the grids 3 and 4 and sides 5, completing the structure 2 of box 1, and, together with the side fins 15, they allow stable and safe blocking of side panels 6 against grids 3 and 4, and against sides 5.

Figures 8a, 8b ands 8c show the sequence followed for assembling the side panels 6 and the subsequent obtaining of the structurally complete box 1.

Firstly (Figure 8a) the side panel 6 is made to knock against the sides 5 in proximity of the top grid 3, and the upper part of said side panel 6 is inserted into the cavity formed between the top grid 3 and the corresponding upper container rim 16 until it lays on said top grid 3.

At this point the side panel 6 is rotated (Figure 8b) around its support point on the top grid 3, that acts as hinge axis, so that the lower part of the side panel 6 is moved nearer to the bottom grid 4 until contact is made between the side panel 6 and the sides 5, using the handles.

When the side panel 6 is completely supported by sides 5, it is slid downwards (Figure 8c) until it touches the bottom grid 4 and is housed between the sides 6 and the lower container rim 17 associated with said bottom grid 4.

In order to prevent accidental opening of the box sides, closing systems 26 have been provided (Figure 1), for example security seals made of a numbered plastic band or made of the traditional lead wire, that is has to be broken to open the box 1.

According to one characteristic of the present invention, it is possible to stack several boxes 1 (Figures 5a e 5b). In particular, according to a preferred embodiment, boxes 1 can be stacked three levels high.

This is advantageously obtained thanks to the presence, in correspondence of the four edges of the top grid of said box 1, of fine metal plates 18 fixed to the frame at a predetermined depth at each corner formed by the intersection between the long sides 10 and to the short sides 11 of the top grid 3 of said box 1.

Said metal plates 18 are preferably triangular in shape, more precisely a right-angled isosceles triangle, with the cathetus attached to the long side 10 and to the short side 11 that intersect at the corresponding angle, and with the unattached hypotenuse.

Moreover, each bottom grid 4 of said box 1 is provided with support feet 19.

Four feet 19 of the box are positioned on the bottom grid 4 near the intersection between the long sides 10 and the short sides 11, at predetermined distances from said sides 10 and 11 so that they can rest on the metal plates 18 of a box underneath, and against said long side 10 and said short side 11 that intersect near said metal plate 18, blocking each other automatically once stacked.

Furthermore, the box 1 is preferably provided with two further support feet 28, located on a crossbar 26 of the bottom grid 4, parallel to said short sides 11 and linked in central position as regards the long sides 10. Said feet 28, when

the box 1 is stacked onto a second box, rest on a crossbar 27 of the top grid of said second box, linked in central position as regards the long sides 10.

The bottom grids 4 of the boxes 1 further comprises advantageously a plurality of sections 20 (Figure 6b) of predetermined size associated, preferably welded, to the underside of said bottom grids 4 on the long sides 10.

According to the invention, said sections 20 are arranged two for each long side 10, in parallel and in contact for their total length with said long sides 10, spaced and extending from the ends of said long sides 10 towards the center of said long sides 10, in order to create a passage 24 between the respective internal ends of said sections 20, for the lift truck forks 21 (Figure 6a) from both long sides 10.

In addition, a passage 25 for said lift truck forks 21 is formed under the respective short sides 11, delimited only by the support feet 19 (Figure 6c).

Preferably, the passages are all the same width as to allow the use of a single lift truck with a single fork.

As shown in Figure 6a, this results in a box 1 that can be raised with forks on all four sides, with an improved easiness in handling and stacking.

Advantageously the side panels 6 are provided with handles 22, inserted into screw eyes 23, attached to the bottom surface 24 of at least one crossbar 9 of said side panels 6.

Said handles 22 are preferably forged from a metal rod of predetermined size, bent in four points in order to provide said handles 22 with the characteristic "omega" shape, the feet of the "omega" corresponding to the pins of the handle 22, inserted into the respective screw eyes 23.

These handles are movable and can be moved up to a 90° angle (Figure 7b) between a protruding position for handling purposes, and the rest position that is recessed in the box side so that it is flush with the surface.

According to a preferred embodiment, there are two handles 22 on each side panel 6, both on the same crossbar 9, at a predetermined distance from

each other, and at a predetermined distance from the uprights 8 on which said crossbar 9 is welded.

Thanks to the presence of said handles 22, it is possible to handle the side panels 6 easily during assembly operations.

According to a preferred embodiment, the metal material used for the modular structure 2 of box 1 is steel. In particular, galvanised steel is the preferable material.

According to a preferred form of embodiment, the long sides 10 of grids 3 and 4 have a length between 210 and 230 centimeters, and the short sides 11 of the grids 3 and 4 have a length between 110 and 130 centimeters, while the uprights 8 of sides 5 and side panels 6 have a length between 200 and 250 centimeters.

In this manner, the box results modular, which is that when stored or stacked with other identical boxes, it occupies the exact internal space of larger structures such as a container.

Boxes particularly for military camp equipment according to the present invention have excellent structural resistance permitting the stacking of up to three boxes on top of each other, thus allowing an increased stocking density, obtaining a considerable saving in storage surface.

The use of sections for assembling of the parts of the structure of the boxes permits an easy, rapid and economical construction of the boxes thereof.

Moreover, on one hand the box structure according to the present invention is solid and sturdy, thanks to the use of steel, and on the other hand it is corrosion resistant thanks to the galvanised finish.

Thanks to the buffer panels in elastomer material, the box 1 is splashing-tight and is practically waterproof; furthermore, said panels ensure a good barrier against splashing, and provide hygienic insulation for the contents against insects and parasites such as woodworm, moths, caterpillars and mould inside the box, without having to resort to chemical and thermal treatments. This

means the boxes can be used for all purposes even in damp tropical climates and can also be stocked out of doors.

Moreover, the use of elastomer guarantees good heat resistance qualities, and this aspect places the boxes according to the invention in an avant-guard position from the point of view of safety and accidents.

Therefore, for the reasons listed previously, boxes for military camp equipment according to the invention offer the advantages of being highly resistant and long-lasting, they can be used repeatedly, they have low maintenance costs, and are easy to assemble, all of which overcome many of the problems associated with the prior art.

In addition, another important aspect of the present invention is the easy maintenance for rapid and simple replacement of any elements that may be damaged, such as a side panel, with a new element kept in stock as a spare part. Said box can furthermore be completely dismantled, allowing its stock and transport with a minimal encumbrance.

Moreover, because of the predetermined size described above, and to the forcibility on four sides, it is possible to easily load up to eleven boxes inside a transport container.

Last but not least advantage of a box particularly for camp equipment according to the invention, is the very strong structure that prevents infraction by non-authorized persons.

Still further, a box according to the invention may be suitably equipped with an identification system, thanks to, for example, a metal plate wearing a barcode and respective number or by the application of an electronic "microchip" survey device.

The finding thus conceived is susceptible to further variants and modifications to satisfy all types of specific or different needs, all of which fall within the scope of protection of the finding itself, as defined by the following claims.